REMARKS

Claims 23-41, 43-48, 50 and 51 are pending in this application. Claim 25 is withdrawn. By this Amendment, claims 33, 37-40, 43, 46-47, 50 and 51 are amended. No new matter is added by these amendments. Further, by this Amendment claims 42 and 49 are canceled without prejudice or disclaimer. Reconsideration based on the amendments and following remarks is respectfully requested.

I. Telephone Election

As discussed during the telephone conversation between Examiner Gates and Applicants' representative, Ms. Schwenning, on November 9, 2006, a provisional election was made with traverse to prosecute the invention of Species III, at least claims 23, 24, and 26-51 read on the elected species. This election was made with traverse.

Withdrawn claim 25 depends from claim 23. Thus, upon allowance of claim 23, rejoinder and allowance of claim 25 is requested.

Furthermore, it is respectfully submitted that the subject matter of all claims 23-51 is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. See MPEP §803 in which it is stated that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions" (emphasis added). It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office.

For the foregoing reasons, withdrawal of the Election of Species Requirement is requested.

II. Claim Objections

The Office Action objects to claim 40. Specifically, the Office Action states that the words "or each" should be deleted from the claim. Applicants respectfully submit that claim 40 as amended obviates the objection.

The Office Action further objects to claims 42, 43, 49 and 50 for grammatical errors. Applicants respectfully submit that the amendments to the claims obviate the objection.

Withdrawal of the objections is respectfully requested.

III. §112 Rejections

The Office Action rejects claims 38, 46, and 47 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Office Action rejects claim 38 for lack of sufficient antecedent basis. The Office Action further rejects claims 46 and 47 for indefiniteness. The rejections are respectfully traversed.

Applicants respectfully submit that claim 38 as amended obviates the rejection. Furthermore, the definition of "measurement probe" in claim 38 has been more explicitly defined based on the disclosure at line 16-22 of page 19 of the present application.

Applicants respectfully submit that the deletion of the word "approximately" from claims 46 and 47 obviates the rejection of claims 46 and 47.

Withdrawal of the rejections is respectfully requested.

IV. The Claims Define Allowable Subject Matter

The Office Action rejects claims 23, 24, 27 and 28 under 35 U.S.C. §102(b) over Ottone et al. (U.S. Pat. No. 5,407,416). The Office Action further rejects claims 23, 24, 27, 28, 31, 32, 39-43 and 48-51 under 35 U.S.C. §102(b) over Zettl (U.S. Pat. No. 4,761, 101). The Office Action further rejects claims 33-36 under 35 U.S.C. §102(b) over Noda (U.S. Pat. No. 4,890,306). The Office Action rejects claim 37 under 35 U.S.C. §102(b) over Noda. The Office Action rejects claim 38 under 35 U.S.C. §102(b) over Noda. The Office Action rejects

claims 39-43 under 35 U.S.C. §102(b) over Zettl. The Office Action rejects claim 48-50 under 35 U.S.C. §102(b) over Zettl. The Office Action rejects claim 51 under 35 U.S.C. §102(b) over Zettl. The Office Action rejects claims 26, 29, 30 and 44-47 under 35 U.S.C. §103(a) over Zettl. The rejections are respectfully traversed.

A. **Rejections Over Ottone (U.S. Pat. No. 5,407,416)**

Independent claim 23 and associated dependent claims 24, 27, and 28 stand rejected for lacking novelty over Ottone.

Ottone describes a machine tool, which includes an automated tool changer unit, for drilling holes in PCBs.

The Office Action also states that Ottone discloses " ... a first electrical link (link from control unit on stationary part 10 to clamp (not labeled) on spindle 26, see col. 6, lines 31-35) between the stationary part 10 and the spindle 26...." Applicants respectfully submit that this assertion is technically erroneous. The part of Ottone referenced by the Office Action (e.g., lines 31-35 of col. 6) describes how the control unit can open and close the spindle clamp. The precise structure of the spindle clamp is not, however, described in Ottone; it is simply stated at lines 61-62 of col. 2 that the spindle clamp is "operated automatically in known manner." A person of ordinary skill in the art would have understood that the spindle clamp of the Ottone device is a pneumatic (not electrical) device. Pneumatic clamps are commonplace in the art because they are reliable and allow high clamping forces to be achieved. In contrast, electrical clamps are typically unsuitable for use in devices of the type described in Ottone due to the high clamping forces that are required. This is further evidenced by the fact that the associated tool change clamp operates pneumatically; see lines 1-9 of col. 5 of Ottone. There is thus no electrical connection at all between the stationary part of the machine and the rotatable spindle. It is thus submitted that Ottone fails to show a

first electrical link between the stationary part and the spindle as recited in claim 23; such a feature is certainly not explicitly disclosed in Ottone and it could not be said to be inherent.

The Office Action asserts that Ottone also shows "... a portion of a second electrical link 128 (link exists from the sensor 128 to control unit, see col. 6, lines 4-16) at the shank receiving area in electrical connection with the first link (through the link with the control unit) for providing in use a disconnectable electrical link between the spindle and the shank (the link to the control unit may be disconnected), wherein the portion of the second link is in the form of at least one electrical contact 129." The feature 128 of Ottone that is mentioned in the Office Action is clearly defined in Ottone as a "sensor" for detecting the tip of a tool (see lines 4-6 of col. 6 of Ottone). The sensor 128 is described at lines 6-16 of col. 6 of Ottone as comprising a c-shaped body 129 that seats a photo-emitter 133 and a photosensor 134. This is also defined in claim 7 (lines 1-7 of col. 8) of Ottone. The sensor 128 does not physically contact the tool held by the spindle, rather the sensor uses light to detect the presence of the tool tip (i.e., sensor 128 is a non-contact sensor).

Applicants submit that the c-shaped body 129 of Ottone is clearly not "at least one electrical contact," as recited in claim 23 of the present application. Although it can be assumed that the sensor 128 is electrically linked in some way to the control unit, the c-shaped body 129 does not provide an electrical contact with anything. Even if the c-shaped body 129 is (incorrectly) said to be an electrical contact, Applicants fail to see how said electrical contact is a portion of a second electrical link that is provided at the shank receiving area of the spindle, as recited in claim 1. The c-shaped body 129 is clearly NOT located at the spindle (it is part of the associated tool change device) and it certainly does not provide an electrical link of any kind with the spindle.

Accordingly, Applicants submit that claim 23 is novel over Ottone. Applicants also submit that Ottone would not have led a skilled person to derive the features recited in claim

23 of the present application. It is thus submitted that claim 23 is also in no way obvious in view of Ottone. It is also submitted that dependent claims 24, 27, and 28 are novel and non-obvious over Ottone at least by virtue of their dependence on claim 23.

B. Rejections over Zettl (U.S. Pat. No. 4, 761,101)

Independent claim 23 and associated dependent claims 24, 27, 28, 31, and 32 stand rejected for lacking novelty over Zettl. Dependent claims 26, 29, and 30 stand rejected for being obvious in view of Zettl.

As shown in Fig. 2, Zettl discloses a spindle head 24 that is rotatable relative to the body of a machine tool. As noted by the Office Action, the spindle head 24 can be said to include a shank receiving area for receiving a tool accessory such as the chuck 10. A supply of electrical power is shown within the spindle head 24 that leads to a primary coil 26. A secondary coil 28 is provided within the chuck 10 that is held in the vicinity of the primary coil 26. The primary and secondary coils thus provide an inductive electrical link (which could be termed a second electrical link) through which power is passed to the circuitry contained within the chuck. It can thus be seen that Zettl does not disclose a portion of a second link that is in the form of at least one electrical contact as recited in claim 23; it is noted that the meaning of the term "electrical contact" is clearly defined at lines 30-33 of page 3 of the present application as meaning an electrical link established via "physical conductive contact." It is thus submitted that claim 23 is novel over Zettl.

It should also be noted that Zettl teaches a similar type of inductive arrangement to that described in U.S. Pat. No. 5,109,223. The disadvantages of the arrangement shown in U.S. Pat. No 5,109,223 are outlined in detail from line 30 of page 1 to line 14 of page 3 of the application as filed and the stated disadvantages also apply to the arrangement described in Zettl. In particular, providing at least one electrical contact, as specified in claim 23, rather than an inductive link, as described in Zettl, has a number of advantages. For example, the

arrangement reduces the space required to house the electrical link, makes signal transmission more reliable and makes the whole arrangement simpler, more robust and hence cheaper to produce. It is thus submitted that Zettl provides no teachings whatsoever that would have motivated a person of ordinary skill to derive a machine tool as defined in claim 23 of the present application. It is thus submitted that claim 23 is in no way obvious in view of Zettl and that dependent claims 24 and 26-31 are novel and non-obvious over Zettl at least by virtue of their dependence on claim 23.

C. **Independent Claims 33 and 37**

Claims 33-37 stand rejected for lacking novelty over Noda (U.S. Pat. No. 4.890,306). Independent claim 33 (plus associated dependent claims 34-36) relate to a tool shank and independent claim 37 relates to a machine tool accessory.

Noda describes a tool holder for mounting in the spindle of a machine tool. The tool holder includes an integral tool wear sensor that, as shown in Fig. 2, includes various electronic components such as an acceleration sensor 33 and battery 36. The tool holder also includes an output head 35 that consists of a pair of electrical (conductive) connectors (see lines 53-56 of col. 3). As explained at lines 42-45 of col. 2, a readout head 17 is also provided at the tool exchange position of the tool exchanger. Prior to tool exchange, the readout head 17 contacts the output head 35 of the tool holder thereby establishing a temporary electrical connection via which data about tool life can be passed from the tool holder to the control apparatus. This allows tool life to be monitored and the use of a tool avoided after a specified tool lifetime has been exceeded.

However, Noda does not disclose a machine tool shank or accessory that, in use, is supplied with power via the at least one electrical contact, as presently claimed. The output head 35 of Noda is used purely for transferring data to the readout head 17 and all necessary

electrical power is provided by the battery 36. It is thus submitted that claims 33 and 37 are novel over Noda.

Furthermore, it is submitted that nothing in Noda would have led a person of ordinary skill to have considered providing an electrical (conductive) contact on the machine tool shank for receiving power. In fact, Noda would have taught a skilled person that an internal power source is essential because the tool wear sensor needs to be operable during machining operations during which there is no electrical link to the machine tool. Applicants thus submit that claims 33 and 37 are also non-obvious in view of Noda and that claims 34-36 are novel and non-obvious at least by virtue of their dependence of claim 33.

D. Independent Claim 38

Claim 38 also stands rejected for lacking novelty over Noda. The specified measurement probe comprises at least one of a scanning probe, a touch trigger probe and a non-contact probe; the measurement probe is explicitly defined as a device that can provide dimensional measurements of a workpiece. The tool wear sensor of Noda is therefore clearly excluded from the definition of measurement probe recited in claim 38, and it is thus submitted that claim 38 is novel over Noda. Furthermore, claim 38 contains no teachings that would have motivated a skilled person to have replaced the tool life sensors with the components necessary to provide a measurement probe. It is thus submitted that claim 38 is not obvious in view of Noda.

E. Independent Claim 39

Claim 39-41 and 43, which are directed to the combination of a machine tool and shank, stand rejected for lacking novelty over Zettl. Dependent claims 44-47 stand rejected for being obvious in view of Zettl.

Claim 39, like claim 23, specifies that the second electrical link is provided by electrical (physically conductive) contacts. In contrast, Zettl uses an inductive arrangement.

For the same reasons as outlined above in respect of claim 23, it is submitted that claim 39 is also novel and non-obvious over Zettl. The associated dependent claims 40-41 and 43-47 are also novel and non-obvious at least by virtue of their dependence on claim 39.

F. Independent Claim 48

Claim 48, which defines a "machine" rather than the "machine tool" of claim 23, also stands rejected for lacking novelty over Zettl. The arguments outlined above in respect of claim 23 thus apply equally to claim 48.

G. Independent Claim 51

Claim 51 also stands rejected for lacking novelty over Zettl. Claim 51 defines that the second electrical link is in the form of any electrical link; this definition of the second electrical link would thus include the inductive link arrangement shown in Zettl. However, Zettl only describes transferring power to the chuck 10 via the electrical link. Data is transferred to and from the Zettl device using the transmitting diode 14 and receiving diodes 16; see lines 54-57 of col. 2 of Zettl. Zettl therefore does not disclose the limitation that, in use, at least one signal path is provided between the stationary part and the shank via said first electrical link and said second electrical link. It is thus submitted that claim 51 is novel over Zettl.

Furthermore, Zettl contains no teachings that would have motivated a person of ordinary skill to replace the optical communications links with a conductive signal path passing from the chuck to the machine tool via the first and second electrical links. It is thus submitted that claim 51 is non-obvious in view of Zettl.

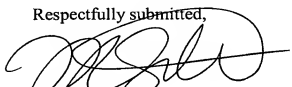
Withdrawal of the rejections is respectfully requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Petition for Extension of Time

Date: April 10, 2007

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